

Minutes: WCC-202
Climatic Data Applications in Irrigation Scheduling and Water Conservation
May 20-21, 2003
Kansas City, Missouri

Introductions

- Joe Henggeler called the meeting to order. Introductions were made around the table.
- Meeting room cost: \$20
- Secretary for 2003 meeting, Peter Palmer. Peter will become Chair for 2004 meeting. A new secretary for 2004 will be elected.
- Dan Smeal, NMSU will organize a committee on turfgrass irrigation.
- Rick Snyder is chair of ASCE committee to formulate crop coefficients for new standardized Penman-Monteith ET procedure.

Western Coordinating Committees – Jim Jacobs

- Dr. Jim Jacobs explained the history of the western coordinating committees. This group is approved through September 30, 2005. To be an official member of the committee, you need to fill out an electronic “Appendix E” at <http://www.lgu.umd.edu> through your experiment station director. The URL for a sample form can be found at: <http://129.82.121.243/webpub/appendicies/Appendix%20E.doc> For assistance, contact Jim’s secretary Kathleen (KathBert@uwyo.edu).
- An annual report is required for the committee to remain in good standing. Members should submit their accomplishments to Jim Jacobs (JJJ@uwyo.edu) and a copy to Ted Sammis (tsammis@nmsu.edu). The annual report will be available at: <http://www.lgu.umd.edu/login.cfm> (enter as a guest). Annual report should be completed within 60 days after the annual meeting.
- There will be a three-year review of this committee in March, 2004.
- Minutes from last year were approved with WCC-220 corrected to WCC-202.

Update on ET Equations

- Terry Howell gave an update on the results of the ASCE Standardized ET Equation Committee. The results of the work of this committee are two Modified Penman-Monteith equations: one for a tall reference crop (like alfalfa), and another procedure for a short reference crop (like grass). He also discussed weather station siting criteria, and weather data quality control procedures. Phase 2 of this committee’s work will include transferability of crop coefficients. The committee report can be found on the ARS Kimberly, Idaho Web site at: <http://www.kimberly.uidaho.edu/water/>.
- Richard Snyder has several tools, including Excel spreadsheets, for computing the new standardized ET on his Web site at: <http://biomet.ucdavis.edu> . The group decided to use his spreadsheet for inter-comparison of computed ET values (see action items below).

Impediments to Adoption of Irrigation Water Management Methods

- The group had a significant discussion regarding various impediments to irrigation scheduling. The bottom line was the bottom line: in many cases, effective water management ends up costing more than wasting water. Where water is cheap, labor is a higher cost than water. In situations where water delivery is expensive (e.g., pumping from deep wells), water users are more inclined to be efficient.
- Need to standardize ET computation to decrease confusion and increase usefulness of this information.
- Many irrigators cannot accurately measure their water delivery (application rate), so they cannot effectively use ET information in their irrigation water management program.
- Need forecasts of ET: in high ET areas with center pivots, irrigators need to keep ahead of the soil moisture deficit.
- Education is important: perhaps Scientific Irrigation Scheduling could be a good 4-H project. Kelly Kopp will chair a committee to begin development of an Irrigation Scheduling 4-H Educational Curriculum. Committee members include Ted Sammis, Joe Henggeler, Mahbub Alam, and Danny Rogers. Dan Smeal will look into participation by the Farmington, NM County Agent.

State/Individual Report Highlights

- Cambell Scientific: interested in learning market needs; especially interested in crop coefficients for irrigation scheduling.
- Onset Computing: interested in learning market needs.
- Texas: Five agricultural weather stations from other nearby networks were incorporated into the Texas North Plains ET network; the network is experiencing funding issues and is working to obtain short term and long term funding. On farm demonstration projects validated the ET models in 2002. Weighing lysimeters were used to measure ET of various crops for development of crop coefficients.
- New Mexico: Drought: the 12 month period ending August 2002 was the driest in recorded history in the SW, and perhaps during the last 1400 years according to tree ring studies. Drought is playing a significant role in irrigation water management techniques.
- Arizona: Continuing development of AZSCHED – a degree-day based irrigation scheduling program. Available for download on-line.
- Kansas: Currently in a drought situation. KanSched available on CD and from their Web site. Program allows a lot of flexibility in entering parameters.
- North Dakota: Water supply looks good: just ending a 10-year wet cycle. Network of 60 weather stations in the North Dakota Agricultural Network (NDAWN). Weather stations are grant-funded. Uses Jensen-Haise ET model, combined with crop coefficients, to produce daily estimates of crop ET, but also provides Penman-Monteith reference ET value from weather station data. Maps are available showing crop water use for the entire state. Working on handheld (Palm) version of checkbook irrigation scheduling program.
- USBR/AgriMet: The Bureau of Reclamation operates a network of 91 agricultural weather stations in the Pacific Northwest. The Kimberly Penman ET model, combined with crop coefficients, is used to produce daily crop specific ET for a variety of crops grown in the

region. Eleven new stations were installed in 2002, with one new station installed in 2003 to date.

- California: CIMIS provides reference ET data from a network of about 150 weather stations, managed by the California Department of Water Resources. Does not provide crop ET due to the large number of crops and management systems throughout the state. CIMIS has installed some temporary ET stations to compare ET between permanent stations and site-specific locations. SIMETAW program uses reference ET to provide ETc. CUP and BIS provide similar tools. Evaluating surface water renewal and stem water potential methods for ET estimation.
- Arkansas: Arkansas Scheduler is a Windows based irrigation scheduling program. Program uses maximum temperature, precipitation and irrigation dates and amounts in a checkbook balance approach to determine a soil moisture deficit. Maximum temperature can be downloaded directly from 13 different weather stations in Arkansas. The program determines pan evaporation from maximum temperature and day length, then computes reference ET, then applies crop coefficients to compute crop ET. Program is downloadable from the Internet at no cost, available on CD for \$15 and future directions include making this program available on a handheld device (Palm).
- Missouri: Uses Woodruff Irrigation Chart, which shows historical crop water use based on county and emergence date. Currently researching a number of scheduling methods.

Next Meeting

- Boise, Idaho 2004, after Mid-May. Peter Palmer will check into dates for USCID and ASCE EWRI (Environmental Water Resources Institute) meetings to avoid conflict. Check into irrigation district/producer for tour.

Action Items – WCC-202 May 20-21, 2003 Kansas City, Missouri

- Link NIMSS to WCC-202 list to access appendix E.
- Members should submit their annual reports to Jim Jacobs (JJJ@uwyo.edu) and a copy to Ted Sammis (tsammis@nmsu.edu) by June 20, 2003.
- Members should also send Ted Sammis the URL for their irrigation scheduling Web site, as well as information on crop coefficients.
- Dan Smeal will sponsor an irrigation scheduling paper at the next Irrigation Association (IA) meeting in Tampa, Florida, November 14-16, 2004
- States compare their method of ET computation against the new standardized ET procedure.
- Send Ted Sammis electronic version of comparison of your current ET method vs. standardized ET method (use 24 hour short crop reference). Use Richard Snyder's Excel spreadsheet as the standardized method, available on his Web site at <http://biomet.ucdavis.edu>
- Establish link to Ted Sammis' irrigation Web site <http://weather.nmsu.edu>
- Kelly Kopp will chair a committee to begin development of an Irrigation Scheduling 4-H Educational Curriculum. Committee members include Ted Sammis, Joe Henggeler, Mahbub Alam, and Danny Rogers. Dan Smeal will look into participation by the Farmington, NM County Agent.

- Ed Martin was nominated and selected for secretary beginning at the conclusion of this meeting, and to take over as President at the conclusion of the 2004 meeting.
- Joe Henggeler (chair), Ed Martin, Mahbub Alam, and Tom Marek, and Danny Rogers will serve on a subcommittee to review irrigation scheduling software.

WCC 202 Attendee Roster, May 20-21, 2003 Kansas City, Missouri

<u>Name</u>	<u>Organization</u>	<u>Phone</u>	<u>Email</u>
Peter Palmer	US Bureau of Reclamation, Boise, ID	(208) 385-9198	ppalmer@pn.usbr.gov
Rick Snyder	University of California, Davis	(530) 752-4628	rlsnyder@ucdavis.edu
Joe Henggeler	University of Missouri	(573) 379-5431	henggelerj@missouri.edu
Jim Jacobs	University of Wyoming	(307) 766-3667	jjj@uwyo.edu
Terry Howell	USDA ARS, Bushland, TX	(806) 356-5746	tahowell@cprl.ars.usda.gov
Ted Sammis	New Mexico State University	(505) 646-2104	tsammis@nmsu.edu
Ed Martin	University of Arizona	(520) 568-2273	edmartin@ag.arizona.edu
Daniel Smeal	NMSU-ASC Farmington, NM	(505) 327-7757	dsmeal@nmsu.edu
Bart Nef	Cambell Scientific, Inc., Logan, UT	(435) 750-9551	bart-n@campbellsci.com
Pat Guinan	University of Missouri	(573) 882-5908	guinanp@missouri.edu
Kelly Kopp	Utah State University	(435) 797-1523	kelly.kopp@usu.edu
Tom Scherer	North Dakota State University	(701) 231-7239	tscherer@ndsuent.nodak.edu
Paul Gannett	Onset Computer, Inc.	(800) loggers	Paul_Gannett@onsetcomp.com
Phil Tacker	University of Arkansas	(501) 671-2267	ptacker@uaex.edu
Tom Marek	Texas A&M University, Ag Exp St.	(806) 677-5665	t-marek@tamu.edu
Mahbub Alam	Kansas State University Extension	(620) 275-9164	malam@ksu.edu
Danny Rogers	Kansas State University	(785) 532-5813	drogers@bae.ksu.edu

Relevant Web sites

<u>Name</u>	<u>Web site</u>
Peter Palmer, USBR AgriMet	http://www.pn.usbr.gov
Ted Sammis, NMSU	http://weather.nmsu.edu
Ed Martin, University of Arizona	http://ag.arizona.edu/crops/irrigation/
WCC-202 Web site	http://www.lgu.umd.edu/project/home.cfm?trackID=411
Dan Rogers	http://www.oznet.ksu.edu/mil
Mahbub Alam	http://www.oznet.ksu.edu/irrigate
Mahbub Alam	http://www.oznet.ksu.edu/wdl
Richard Snyder	http://biomet.ucdavis.edu
Cal Integrated Pest Management	http://ipm.ucdavis.edu
CIMIS	http://www.cimis.water.ca.gov
Tom Scherer	http://ndawn.ndsu.nodak.edu/applications.html
Paul Gannett	http://www.onsetcomp.com
Phil Tacker	http://aragriculture.org (irrigate.info)
Thomas Marek	http://amarillo2.tamu.edu/nppet/petnet1.htm
Terry Howell	http://www.cprl.ars.usda.gov/wmru.htm
Joe Henggeler	http://www.agebb.missouri.edu/irrigate
Dan Smeal	http://weather.nmsu.edu
Pat Guinan	http://agebb.missouri.edu/weather

Minutes submitted by:

Peter L. Palmer
AgriMet Program Coordinator
US Bureau of Reclamation
Pacific Northwest Region
PN-6211
1150 North Curtis Road Suite 100
Boise, Idaho 83706-1234
(208) 378-5283
FAX 378-5305
CELL 867-9113
ppalmer@pn.usbr.gov
<http://www.pn.usbr.gov/agrimet>